KDL Precision Molding Corp.
11381 Bradley Avenue
Pacoima, California 91331
P: 818-896-9899 - F: 818-896-8276
E-mail: info@kdlprecision.com

ISO-9002 Registered

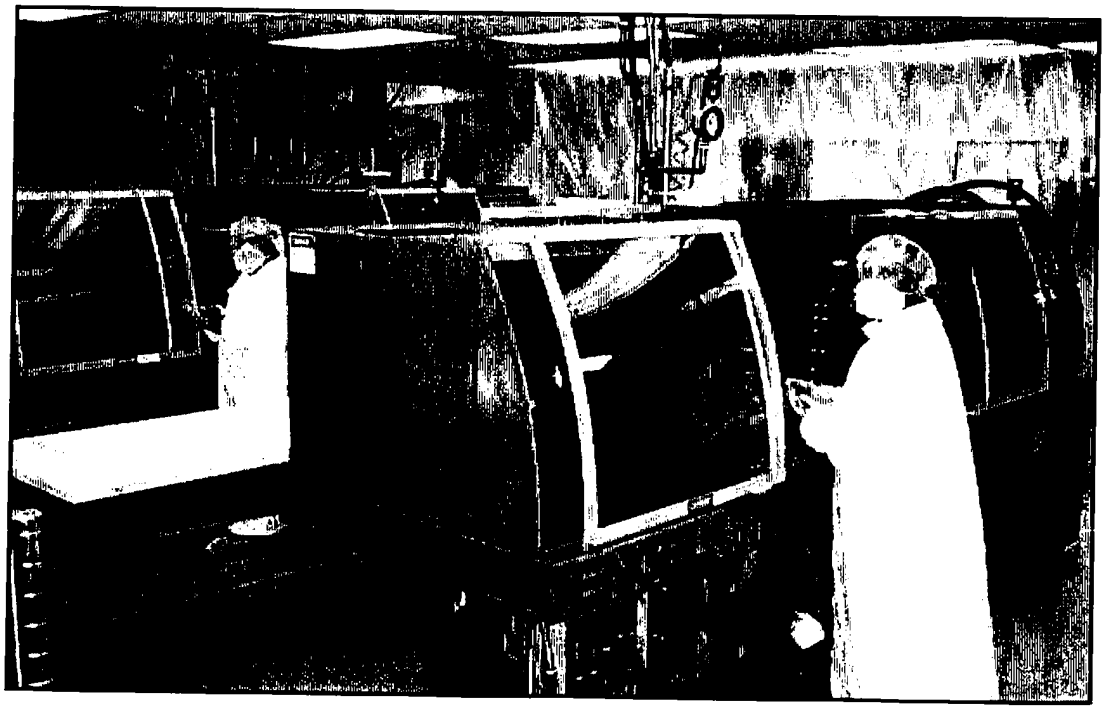
TYPES OF RUBBER MOLDING

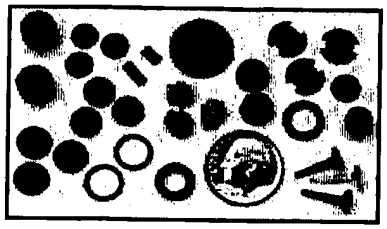
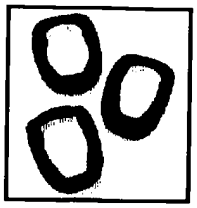
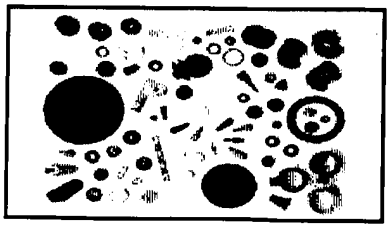
LIQUID INJECTION MOLDING: (LIM™)

The injection molding of **Liquid Silicone Rubber (LSR)** uses much the same process and equipment as does injection molding. In both processes, the mold is heated and closed before the uncured rubber is injected. Unlike high consistency rubber (HCR), also known as gum stock, liquid silicone is just that, a "high viscosity liquid" that comes in two parts, Part A and Part B.

Both parts are liquid but one part contains the catalyst which is platinum. Liquid silicone has the consistency of cold molasses, is naturally translucent and comes in either pail kits (approx. 80 lbs) or drum kits (approx. 800 lbs) The two parts are mixed and delivered to the barrel of the injection press via a mixing/metering pumping system. If desired, **pigment** may be added via a pumping system to color the liquid silicone. The mixed liquid silicone is then injected into the mold much like gum stock, but the **runner**, **gate** and **sprue** are generally smaller due to its lower **viscosity**. Once in the mold, the liquid silicone cures at a much faster rate than typical high consistency silicone due to its platinum cure system. As a result of this rapid cure cycle, the part price is frequently lower than parts made using conventional molding processes such as **Compression**, **Transfer** and **Injection Molding**.

LIM™ is ideal for applications where contamination is a problem or where high volumes are required. The Medical Industry prefers **LIM™** because it is a closed system of molding, meaning, the the pail or drum kits of uncured **liquid silicone** are loaded into the pumping system, injected and cured without human contact.



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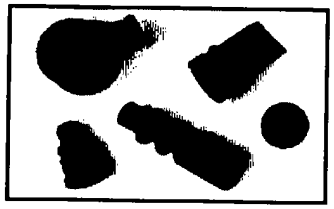
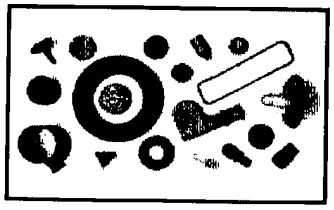
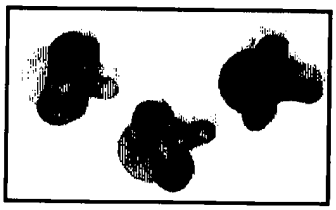
INJECTION MOLDING

In the case of Injection Molding, the rubber is supplied to the injection machines barrel & nozzle assembly on a continual basis. In this case, the rubber used is a high consistency **silicone** rubber (HCR) known as "gum stock".

The gum stock is supplied to the injection barrel via a pressurized device called a "stuffing box".

The injection press closes the heated mold and applies pressure to keep the mold closed during the injection and curing cycles. The screw then injects the rubber through the nozzle into the mold. The rubber travels through the mold via a system of runners and sprues and finally enters the mold cavities through a **gate** or gates. It then fills and packs the cavities to form the desired part. The rubber is heated by the mold and the friction of the **screw**, **runner**, **sprue** and **gate**. The rubber then completes its cure cycle and is removed from the mold.

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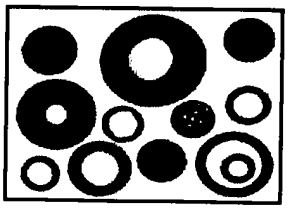
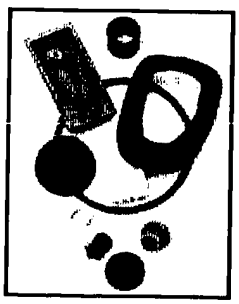
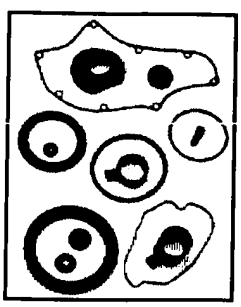
COMPRESSION MOLDING



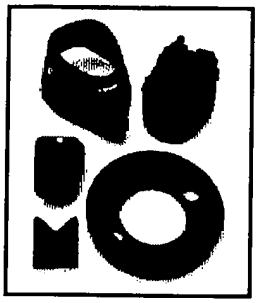
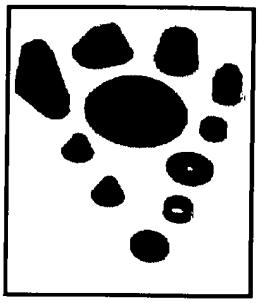
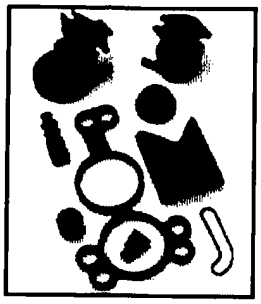
Compression molding is the simplest form of thermal set molding. Compression molds vary considerably in size, shape, and complexity and also contain from one to a very high number of cavities. The compression molding process is as follows: An uncured rubber preform, which is often shaped to the approximate size & configuration of the desired finished part, is placed directly in the mold cavity prior to mold closure.

During the molding process, rubber is compressed (squeezed) between the Top and Bottom plates. The uncured pre-form must weigh more than the finished part in order for air to be driven out of the mold cavity during mold closure. If the preform weighs the same or less than the finished part; voids, air traps or nonfills will appear on the finished product. The excess rubber will flow into the overflow or flash groove. Two, three or more mold plates may be used depending upon part configuration and complexity. The rubber is then vulcanized (cured) utilizing both heat and pressure.

TRANSFER MOLDING

Transfer molds also vary considerably in size, shape and complexity and may contain from one to a high number of cavities.

Click Here for Additional Photos

In the Transfer Molding Process the uncured rubber is not placed directly in the mold as in compression molding. Instead, it is placed in a Transfer Pot located above the cavity area. It is then pushed or transferred into the cavity by a Piston through a **runner**, **sprue** and **gate** system. The rubber is then vulcanized (cured) utilizing heat & pressure. Transfer molding is similar to **Injection Molding** because rubber enters the cavity after the mold is closed.

For Direct Contact

KDL Precision Molding Corp.
11381 Bradley Avenue Pacoima, California 91331
Phone: 818-896-9899 • Fax: 818-896-8276
Engineering E-Mail: DavidW@kdlprecision.com
Sales E-Mail: BenB@kdlprecision.com

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One entry found for **protrude**.

Main Entry: **pro·trude**
Pronunciation: prO-'trüd
Function: *verb*
Inflected Form(s): **pro·trud·ed**; **pro·trud·ing**
Etymology: Latin *protrudere*, from *pro-* + *trudere* to thrust -- more at THREAT
Date: 1620
transitive senses
1 *archaic* **:** to thrust forward
2 : to cause to project
intransitive senses **:** to jut out from the surrounding surface or context <a handkerchief *protruding* from his breast pocket>
- **pro·tru·si·ble** /-'trü-s&-b&l, -z&-/ *adjective*